DETAILED ACTION

1. This action is responsive to correspondence mailed March 5, 2008. Claims 1, 10, 15, 25/1, 25/10 and 33-35 are pending in the application.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tiberiu Weisz (Reg. 29,876) on June 24, 2008.

The claims are amended as follows:

25 (CURRENTLY AMENDED). The module as set forth in ~~either of claims~~ claim 1 ~~or 10~~, further comprising an iris filter (IR filter) disposed in the space of the housing for controlling an amount of light of the image focused from the camera lens.

36 (NEW). The module as set forth in claim 10, further comprising an iris filter (IR filter) disposed in the space of the housing for controlling an amount of light of the image focused from the camera lens.

Allowable Subject Matter

3. Claims 1, 10, 15, 25 and 33-36 are allowed.

4. The following is an examiner's statement of reasons for allowance:

Consider claim 1, the closest prior art, Kuroda (US Patent Application Publication 2003/0036365) teaches:

A camera module ("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals ("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit ("camera module", 6, figure 7) for focusing an image of a subject ("suitable for close range photography" paragraph 0034);

a light emitting unit ("flash", 12, figures 6 and 7) for emitting light to the subject ("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a first FPC (flexible printed circuit) ("flexible printed circuit board", 16, paragraph 0036, figure 7) electrically connected between the image capture device unit and the light emitting unit (see figure 7, "the close-range camera module (6) is connected to a connector (15) mounted on a main printed circuit board (14) inside the upper casing (1a)" paragraph 0036, The flash is mounted on the main printed circuit board (14).);

a connector unit ("connector (15)", paragraph 0036, figure 7) for applying an electric signal to the image capture device unit (6, figure 7).

However, Kuroda does not explicitly teach that the light emitting unit is an LED.

Like Kuroda, Rinaldi et al. (US Patent Application Publication 2003/0057430) teaches of imaging (paragraph 0005). Rinaldi et al. also teaches of using printed circuit

boards (paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer (paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

However, the combination of Kuroda and Rinaldi et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that another FPC is electrically connected between the image capture device unit and the connector unit.

Park (US 2001/0036845) is similar to Kuroda in that Park teaches of a mobile communication terminal (figures 1-3) which includes an image capture device (40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda and Rinaldi et al., Park teaches that a connector unit (121, figure 3) is installed in a motherboard (120) of the mobile communication terminal (paragraph 0030), and that an FPC (410) is electrically

connected between the image capture device unit (40) and the connector unit (121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination of Kuroda and Rinaldi for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

However, the prior art of record does not teach nor reasonably suggest that the LED is mounted on the housing, or that both the image capture device and the LED unit are electrically connected to the mother board via only one connector as required by claim 1.

Claims 25 and 33 are allowed as being dependent from an allowed claim 1.

Consider claim 10, the closest prior art, Kuroda (US Patent Application Publication 2003/0036365) teaches:

A camera module ("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals ("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit ("camera module", 6, figure 7) for focusing an image of a subject("suitable for close range photography" paragraph 0034);

a light emitting unit ("flash", 12, figures 6 and 7) for emitting light to the subject ("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a FPC ("flexible printed circuit board", 16, paragraph 0036, figure 7) including a first part (13) formed so that the image capture device (6) unit is mounted thereon (see figure 7, paragraph 0036), a second part (14) formed so that the light emitting unit (12) is mounted thereon (see figure 7), and a connection part (15) for electrically connecting the first part (13) and the second part (14), the first part (13) and the second part (14) being integrally formed with the connection part (15) (see figure 7, "the close-range camera module (6) is connected to a connector (15) mounted on a main printed circuit board (14) inside the upper casing (1a)" paragraph 0036, The flash is mounted on the main printed circuit board (14).); and

a connector unit("connector (15)", paragraph 0036, figure 7) for applying an electric signal to the FPC (16) (The connector (15) attaches the FPC (16) to the main PCB (14) which supplies electric signals.)

However, Kuroda does not explicitly teach that the light emitting unit is an LED, or that the image capture device and LED are directly mounted on flexible printed circuits.

Like Kuroda, Rinaldi et al. (US Patent Application Publication 2003/0057430) teaches of imaging (paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards (paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer (paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

Yamada et al. (US Patent Application Publication 2001/0050717) teaches of a camera device having a similar structure to that taught by Kuroda (see figure 1, paragraph 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector (8) for connecting the imaging device to a motherboard (7). Yamada et al. also teaches of the use of a flexible printed circuit ("flexible wiring board", 5, figure 1) for connecting a camera module ("CMOS Camera", 20, figure 1). The device of Yamada et al. also

contains a lens (2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

In addition to the teachings of Kuroda, Yamada et al. explicitly teaches of mounting components directly on an FPC. In the eleventh embodiment of the disclosed invention, paragraphs 0093-0099, figure 11, Yamada et al. teaches that an image pick-up semiconductor (4) and image processing semiconductor (9) are mounted on a flexible wiring board (5). The reason that one is motivated to mount components directly on the an FPC is that a more compact and less costly device is created (Yamada et al., paragraph 0099).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to mount the image capture device and light emitting unit taught by Kuroda directly on the FPC as taught by Yamada et al. because mounting components directly on an FPC provides the benefit of removing the rigid wiring board connected to the FPC and thus producing a device which can be made more compact to a greater extent and made much less costly (paragraph 0099).

However, the combination of Kuroda, Rinaldi et al. and Yamada et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that a portion of FPC is electrically connected between the image capture device unit and the connector unit on the motherboard.

Park (US 2001/0036845) is similar to Kuroda in that Park teaches of a mobile communication terminal (figures 1-3) which includes an image capture device (40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Rinaldi et al., and Yamada et al., Park teaches that a connector unit (121, figure 3) is installed in a motherboard (120) of the mobile communication terminal (paragraph 0030), and that an FPC (410) is electrically connected between the image capture device unit (40) and the connector unit (121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a portion of the FPC for connecting to the connector as taught by Park wherein the portion of the FPC is connected to the image capture device taught by the combination of Kuroda, Rinaldi et al., and Yamada et al. for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

However, the prior art of record does not teach nor reasonably suggest that the LED is mounted on the housing, or that both the image capture device and the LED unit are electrically connected to the mother board via only one connector as required by claim 10.

Claims 36 and 34 are allowed as being dependent from an allowed claim 10.

Consider claim 15, the closest prior art, Kuroda (US Patent Application Publication 2003/0036365) teaches:

A camera module ("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals ("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit ("camera module", 6, figure 7) for focusing an image of a subject ("suitable for close range photography" paragraph 0034);

a light emitting unit ("flash", 12, figures 6 and 7) for emitting light to the subject ("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a connection unit including a first rigid part (13) formed so that the image capture device unit (6) is mounted thereon (see figure 7), a second rigid part (14) formed so that the LED (12) is mounted thereon (see figure 7), and a flexible connection part (16) for electrically connecting the first rigid part (13) and the second rigid part (14) (see figure 7, "the close-range camera module (6) is connected to a connector (15) mounted on a main printed circuit board (14) inside the upper casing (1a)" paragraph 0036, The flash is mounted on the main printed circuit board (14).);

and a connector unit ("connector (15)", paragraph 0036, figure 7) for applying an electric signal to the circuit board (6, figure 7).

However, Kuroda does not explicitly teach that the light emitting unit (12) is an LED, or that image capture device PCB (13), LED PCB (14), and FPC (16) are integrated as a rigid-flexible PCB.

Like Kuroda, Rinaldi et al. (US Patent Application Publication 2003/0057430) teaches of imaging (paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards (paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer (paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out (Rinaldi et al., paragraph 0005).

Like Kuroda, Cibulski et al. (US Patent 5,378,306) teaches of making circuits for small electronic packages (column 6, lines 46-50). Cibulski et al. teaches that due to the increasing complexity of electronic devices, meeting high performance requirements along with minimum space and weight requirements can be quite a task (column 1, lines 27-33). Therefore, Cibulski et al. teaches a method of producing a rigid-flexible circuit board (column 3, line 46 through column 6, line 27) that overcomes the deficiencies in current circuit boards.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a rigid-flexible PCB as taught by Cibulski et al. to

integrate the image capture device PCB (13), LED PCB (14), and FPC (16) as taught by the combination of Kuroda and Rinaldi et al. because using a rigid-flexible PCB provides the benefit of meeting the performance, space, and weight requirements of increasingly complex electrical circuits (Cibulski et al., column 1, lines 24-36).

However, the combination of Kuroda, Rinaldi et al., and Cibulski et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that another FPC is electrically connected between the image capture device unit and the connector unit.

Park (US 2001/0036845) is similar to Kuroda in that Park teaches of a mobile communication terminal (figures 1-3) which includes an image capture device (40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Rinaldi et al., and Cibulski et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal (paragraph 0030), and that an FPC (410) is electrically connected between the image capture device unit (40) and the connector unit (121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination of Kuroda, Rinaldi et al., and Cibulski et al. for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled

by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

However, the prior art of record does not teach nor reasonably suggest that the LED is mounted on the housing, or that both the image capture device and the LED unit are electrically connected to the mother board via only one connector as required by claim 15.

Claim 35 is allowed as being dependent from an allowed claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Havens et al. (US 6,060,722) teaches of an LED (50) mounted on an image capture device unit housing (see figure 3).

7. Meek et al. (US 6,741,286) teaches (see figures 1a and 1b) a camera module comprising and image capture device (12) on an image capture device PCB (10), an LED (17) on an LED PCB (see figure 1a), a housing (15) which the LED PCB is

mounted on (see figure 1b), and a lens (16), wherein the image capture device PCB (10) is connected to the LED PCB with a connection portion (11, see column 2, lines 1-49).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALBERT H. CUTLER whose telephone number is (571)270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC
06/24/2008

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